

FOSTER WHEELER ENVIRONMENTAL CORPORATION

June 5, 2001

Ms. Lauren Fondahl U.S. Environmental Protection Agency, Region 9 75 Hawthorne Street San Francisco, CA 94105

SUBJECT: Soil Investigation Report

Scott Road Associates LLC & Menifee Road Associates LLC

Scott Road North Residential Subdivision

Dear Lauren:

As we discussed, enclosed are two copies of the first two pages Soil Investigation Report, dated May 15, 2001, for the Scott Road North Residential Subdivision prepared on behalf of Scott Road Associates LLC and Menifee Road Associates LLC (Warmington). These pages replace the first two pages of the report previously sent, as the previous copies mistakenly contained the word "DRAFT" in the title.

If you have any questions or comments, please give me a call at (949) 756-7516. It has been a pleasure working with you, and I appreciate your prompt attention to our project.

Sincerely,

Foster Wheeler Environmental Corporation

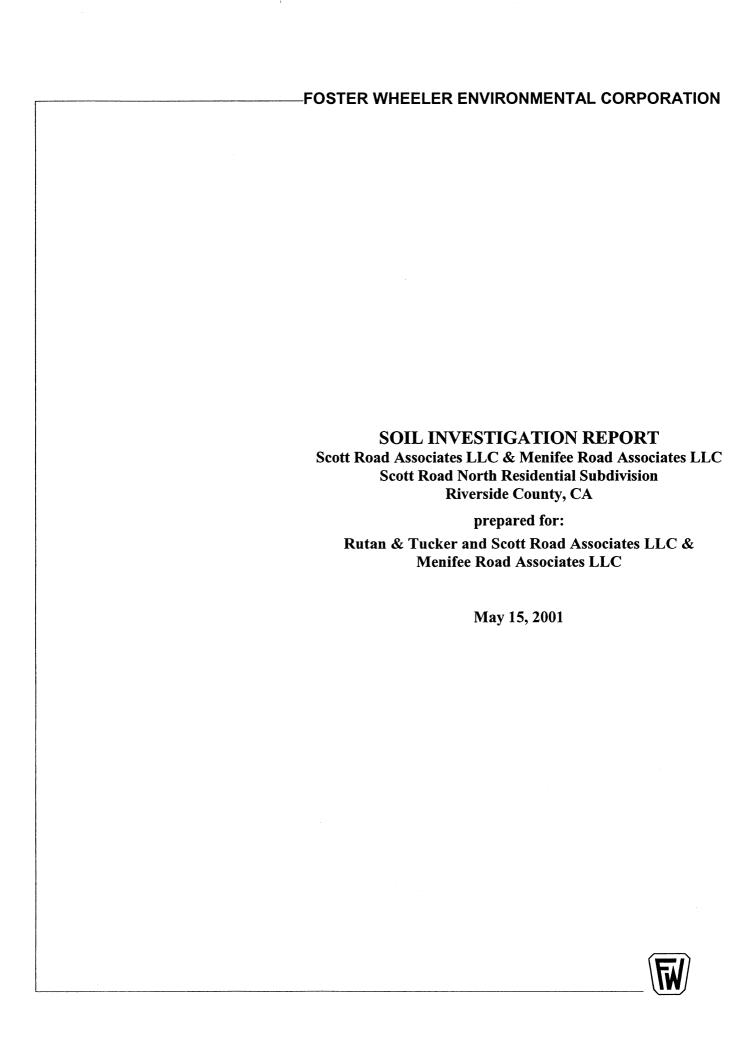
Mark E. Losi, Ph.D.

Mark fori

Project Manager

Attachments (2) File





SOIL INVESTIGATION REPORT SCOTT ROAD NORTH RESIDENTIAL SUBDIVISION RIVERSIDE, CALIFORNIA

Prepared for:

Rutan & Tucker and Scott Road Associates LLC & Menifee Road Associates LLC

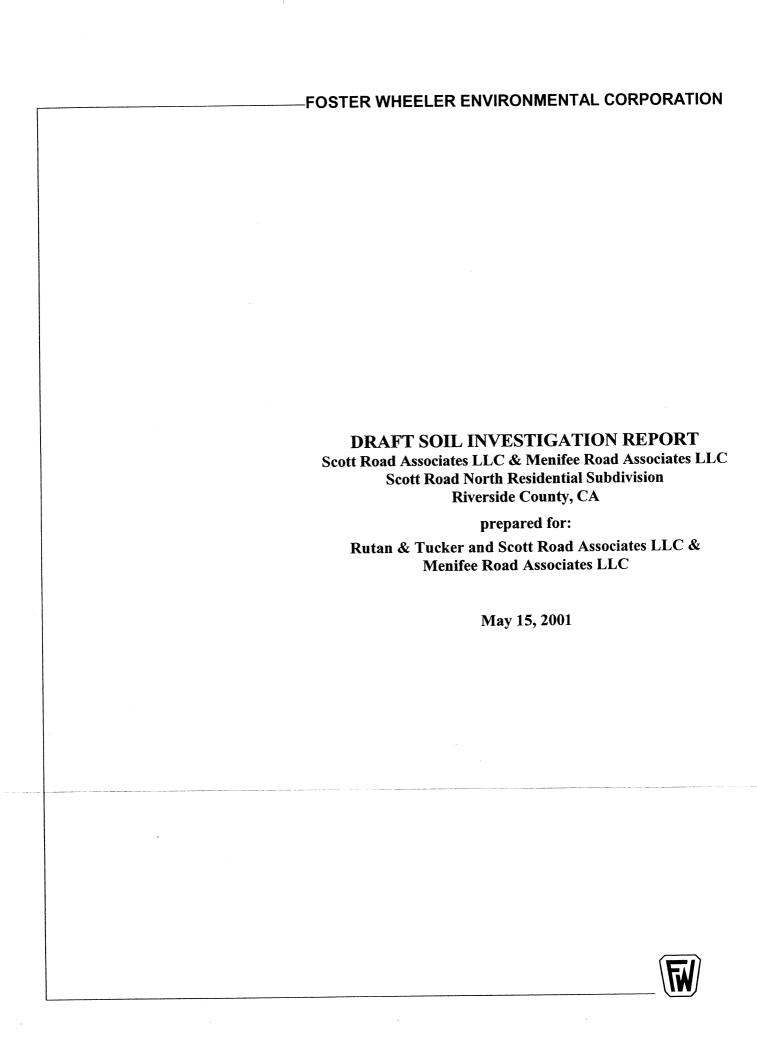
Prepared by:



FOSTER WHEELER ENVIRONMENTAL CORPORATION

1940 E. Deere Street, Suite 200 Santa Ana, California 92705

May 15 2001



DRAFT SOIL INVESTIGATION REPORT SCOTT ROAD NORTH RESIDENTIAL SUBDIVISION RIVERSIDE, CALIFORNIA

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May 15 2001

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1.0 INTRODUCTION

This report presents the results of the soil investigation performed by Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) during March 2001, at the proposed Scott Road North Residential Subdivision (Project Site) of Scott Road Associates LLC and Menifee Road Associates LLC (Warmington). The work summarized in this report was conducted at the request of Warmington, in general accordance with the Work Plan prepared by Foster Wheeler Environmental dated April 6, 2001. The methodology described in the Work Plan was approved verbally by U.S. EPA in a phone call on March 13, 2001 prior to conducting the work. U.S. EPA subsequently confirmed approval of the Work Plan in writing in a letter dated April 13, 2001.

1.1 OBJECTIVE

The objective of the soil investigation was to show whether or not viable helminth ova are present in the soils at the Project Site.

1.2 SCOPE

The scope of work to address this objective included the following elements:

- Collection and laboratory analysis of soil samples from the Project Site
- Data evaluation and report preparation

1.3 REPORT ORGANIZATION

This report is organized as follows: Section 1.0 provides a brief introduction; Section 2.0 describes the site location and history; Section 3.0 outlines the methods used in the investigation; Section 4.0 presents and discusses the results; Section 5.0 lists the cited references; and Section 6.0 lists those who prepared and reviewed the report. Laboratory packages, including results, and chain-of-custody documents are included in Appendix A.

2.0 SITE DESCRIPTION

2.1 LOCATION

The Project Site is located on approximately 120 acres of unincorporated land within the southwestern section of Riverside County, north of Scott Road and east of Menifee Road (Figure 1). The site is also commonly referred to as fields RDZ-11, RDZ-12, RDZ-13 and RDZ-14. Figures 2 and 3 show the proximity of the fields relative to local access roads.

2.2 SITE HISTORY AND BACKGROUND

In May and up to the first part of June 2000, biosolids from local sewage treatment plants were applied at the Project Site as a fertilizer to the land for agricultural purposes at the agronomic rate of approximately 5-6 dry tons per acre range. The biosolids were then disked into the soil to a depth of approximately 6 inches. Warmington is planning to develop single family homes on the Project Site, and requested this soil investigation to identify any potential environmental concerns related to the application of the biosolids on the property.

The standards and requirements applicable to the land application of biosolids are regulated by the U.S. EPA under Part 503 of Title 40, Code of Federal Regulations (CFR). The regulations provide various time restrictions on public exposure to, and the types of food crops that may be harvested from, land treated with biosolids. These time restrictions are specifically imposed based on the potential presence of certain pathogens.

At the Project Site, the restriction of concern is a 38-month period after the application of Class B biosolids before subsurface food crops may be harvested. This restriction specifically addresses the potential presence of helminth ova, which can remain viable for up to 38 months in the soil under ideal conditions. An investigation was conducted to evaluate whether or not viable helminth ova are present in soils at the Project Site, and therefore to determine if the requirements of the 38-month harvesting restriction (to insure that viable helminth ova are not present), have been met, or are still applicable.

3.0 FIELD INVESTIGATION METHODS

As stated above, the objective of the soil investigation was to show whether or not viable helminth ova are present in soils at the project site. The investigation included collection and laboratory analysis of soil samples.

3.1 CONSTITUENT OF INTEREST

The constituent of interest for the project site was helminth ova. In general, helminth ova may or may not be present in biosolids applied to any given site, since the presence of these pathogens is dependent on their presence in the population generating the biosolids. The principal means of terminating the viability of helminth ova is through the drying of the soil, as the viability of the helminth ova decreases markedly at low moisture levels (U.S. EPA, 1999). If helminth ova were present in the biosolids applied at the project site, survival rates are expected to be very low. This is because the application occurred just before summer, the biosolids were applied to topsoil which was not irrigated over the entire summer, and the daily summer temperatures in Riverside regularly exceed 90-100 degrees Fahrenheit, as they did in the summer of 2000.

3.2 LABORATORY SAMPLES AND SAMPLE LOCATIONS

In order to test for the presence of viable helminth ova, twelve soil samples were collected along a grid at a rate of 1 sample per 10 acres (each sample consisted of 10 subsamples), as specified by EPA. Sample locations are identified on Figures 4 through 7. One background sample was collected and analyzed for viable helminth ova. The background sample location was selected in an adjacent area where no biosolids had been applied. The background sample was collected for quality control purposes to identify the possible introduction of helminth ova through laboratory procedures during analysis. In addition, one duplicate sample was collected and analyzed for viable helminth ova to check for reproducibility as an additional quality control measure. The location of the background sample is shown in Figure 7.

The soil samples collected included mixes of soil and biosolids to thoroughly assess the potential presence of viable helminth ova at the site, which was possible since the biosolid material was discernable from the soil at the Project Site. The biosolid material was included in the sampling process because helminth ova, if present anywhere on the site, would most likely be found in the biosolid material itself. The samples were collected on March 20, 2001.

All samples were collected randomly at a depth of 3-6 inches below ground surface (bgs) since the biosolids had previously been disked to a depth of approximately 6 inches. Samples at these depths were accordingly more representative of where helminth ova would survive for longer periods, since they are further from the surface. Helminth ova, which could also be present closer to the surface, have been exposed to more heat and desiccation.

To avoid potential cross-contamination, the sampling trowels used for collection of each soil sample were thoroughly cleaned, wiped, and decontaminated using isopropyl alcohol between subsamples. For each 10-acre plot, 10 subsamples were collected a depth of 3-5 inches bgs and composited in a large ZiplocTM bag, thoroughly mixed, and an aliquot (approximately 100 grams) of the composite sample was transferred to the Tekmar sample bag (provided by the laboratory).

The Tekmar sample bags were tightly closed, wiped clean with dry paper towels, and labeled. Each sample bag was placed in a ZiplocTM bag, and placed in a cooler on ice. Sample number, date, time, and any comments were recorded for each sample in the field logbook. After each sample was collected, the sampling trowel was decontaminated.

Summarized below are the sample types, sample designations, and number of samples collected and submitted for laboratory analyses (refer to Figures 4 through 7 for corresponding locations).

Sample Type	Analysis	Material	Sample Designation	Number of Sub Samples		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-11-S1	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-11-S2	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-11-S3	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-11-S4	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-12-S1	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-12-S2	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-13-S1	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-13-S2	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-13-S3	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-13-S4	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-14-S1	10		
Soil	Helminth Ova	Soil/Biosolids Mixture	RDZ-14-S2	10		
Soil	Helminth Ova	Duplicate (RDZ-14-S1)	RDZ-00-S1	10		
Soil	Helminth Ova	Background	RDZ-00-S2	1		

3.3 ANALYTICAL

Samples were sent to BioVir Laboratories, Inc. located in Benicia, California. The samples were tested for helminth ova using method EPA 600/1-87/014 and for total solids (required for reporting helminth ova) using method SM 18th, 2540B.

All soil samples were handled and transported using a Chain of Custody (COC) form. The COC provided the means to identify and track each individual sample from the point of collection through data analysis. The following procedures were followed:

- A COC record was created for each sample shipment. The record was completed in indelible ink. Changes or corrections to the record consisted of lineout deletions (e.g., no "white-out" correction fluid), which were initialed and dated by the author of the change or correction.
- The COC record was completed and signed by the person who performed and/or witnessed the sample collection activity.
- The person relinquishing the samples signed and dated the "Relinquished by" row and retained a copy along with the shipping papers.
- The courier or laboratory representative who accepted the incoming sample shipment completed the first "Received by" row on the COC record to acknowledge receipt of the samples. This signed original (or a copy) was then returned with the analytical reports.

The laboratory representative who accepted the incoming sample shipment at the receiving laboratory inspected the samples. If there were any discrepancies or potential anomalies, the samples were not to be logged in for testing until the issue was resolved through contact with the originating field worker or his/her Project Manager. No discrepancies or anomalies were noted.

4.0 RESULTS OF SOILS INVESTIGATION

The following section presents results of the soils investigation.

4.1 RESULTS OF SAMPLING AND TESTING VIABLE HELMINTH OVA

Results of the sampling and testing for viable helminth ova are presented in Table 1. No viable or non-viable helminth ova were detected in any of the samples. These results reflect the lowest detection limit for this assay of 1 helminth ova per 4 grams of total solids.

4.2 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

The laboratory performed analysis on one duplicate sample and one background soil sample. No helminth ova, viable or non-viable, were detected in either of these samples.

4.3 SUMMARY OF RESULTS

Results from the sampling and testing indicate no viable or non-viable helminth ova were detected in soils from the Project Site. Based on these results, the soils tested at the Project Site do not contain helminth ova, and helminth ova do not, therefore, pose any existing or future danger in the growing or harvesting of subsurface crops. Accordingly, the 38-month time restriction under U.S. EPA regulation, Part 503 of Title 40, which specifically relates to the presence of helminth ova, has no application to the subject property.

5.0 REFERENCES

Environmental Protection Agency (EPA). 1999. <u>Environmental Regulations and Technology – Control of Pathogens and Vector Attraction in Sewage Sludge</u>, EPA Pub. No. 625/R-92/013, Center for Environmental Research Information, Cincinnati.

6.0 SIGNATURE PAGE

The following Foster Wheeler Environmental personnel were involved preparation of this Report:

Mark Losi, Ph.D.
Project Manager

The following Foster Wheeler Environmental personnel performed review of the Report:

Mark Cutler, R.G., C.HG.

Supervising Geologist

TABLES

Attorney-Client Privileged and Attorney Work Product Material

Warmington - Report 0301.doc

Table 1
Helminth Ova Laboratory Results

Sample Label	Viable Helminth Ova per 4 Grams Total Solids ^{1/2}
RDZ-11-S1	<1
RDZ-11-S2	<1
RDZ-11-S3	<1
RDZ-11-S4	<1
RDZ-12-S1	<1
RDZ-12-S2	<1
RDZ-13-S1	<1
RDZ-13-S2	<1
RDZ-13-S3	<1
RDZ-13-S4	<1
RDZ-14-S1	<1
RDZ-14-S2	<1
RDZ-00-S1	<1
RDZ-00-S2	<1

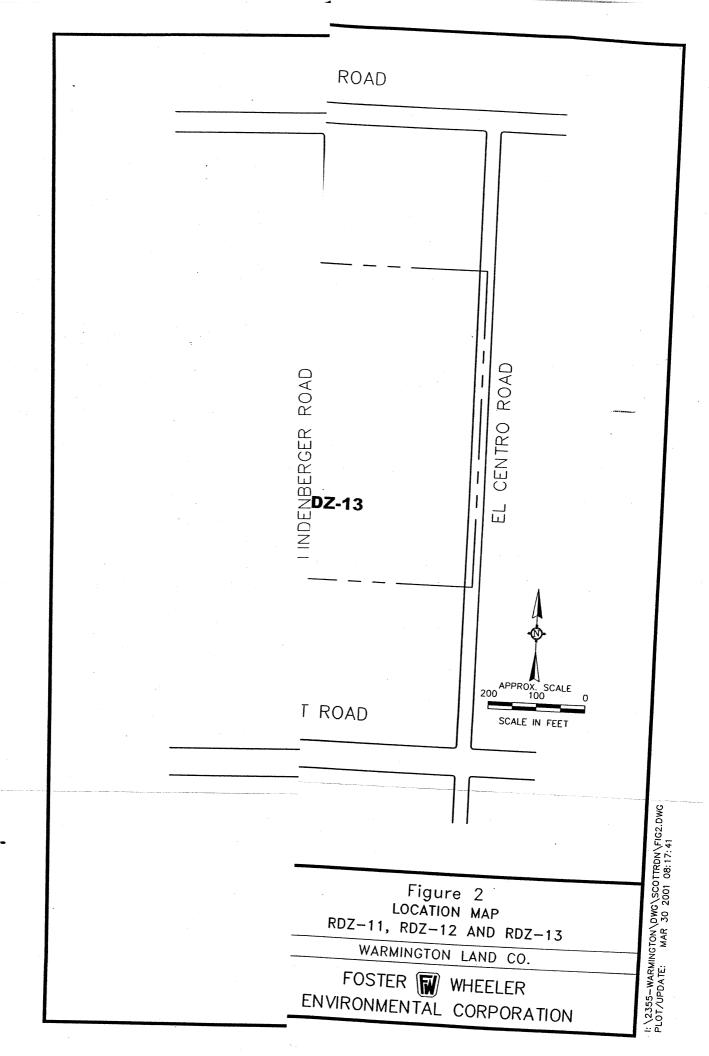
^{1/}Based on the lowest detection limit of 1 helminth ova per 4 grams of total solids.

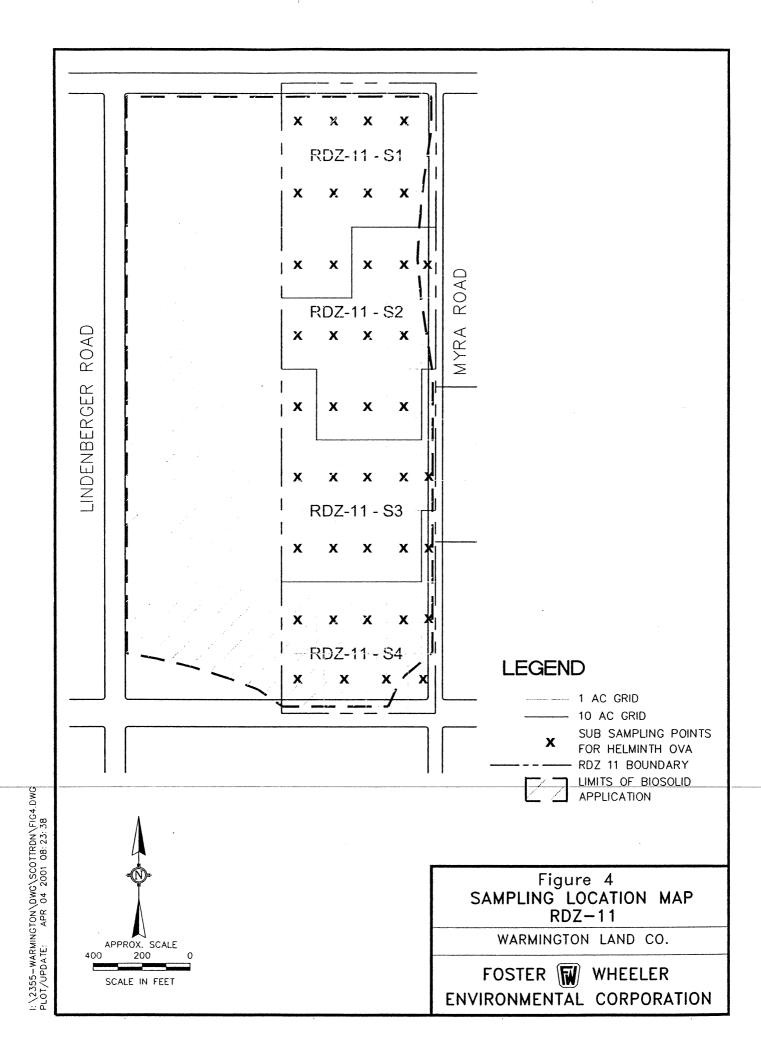
FIGURES

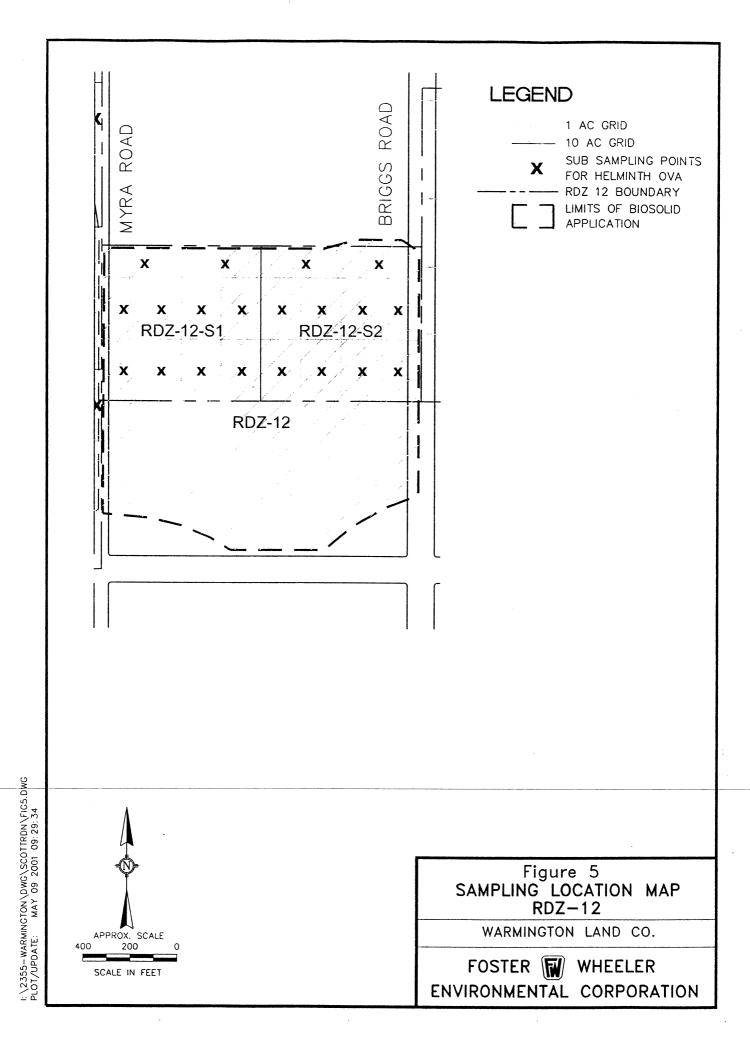
Figure 1
SITE LOCATION MAP

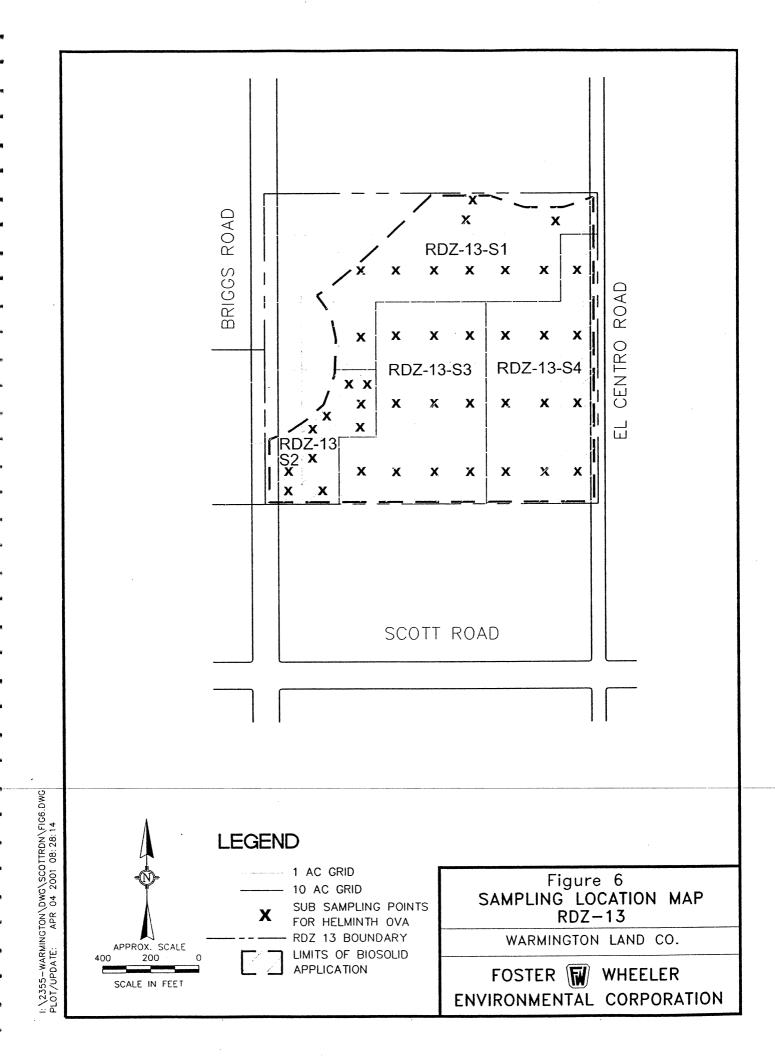
WARMINGTON LAND CO.

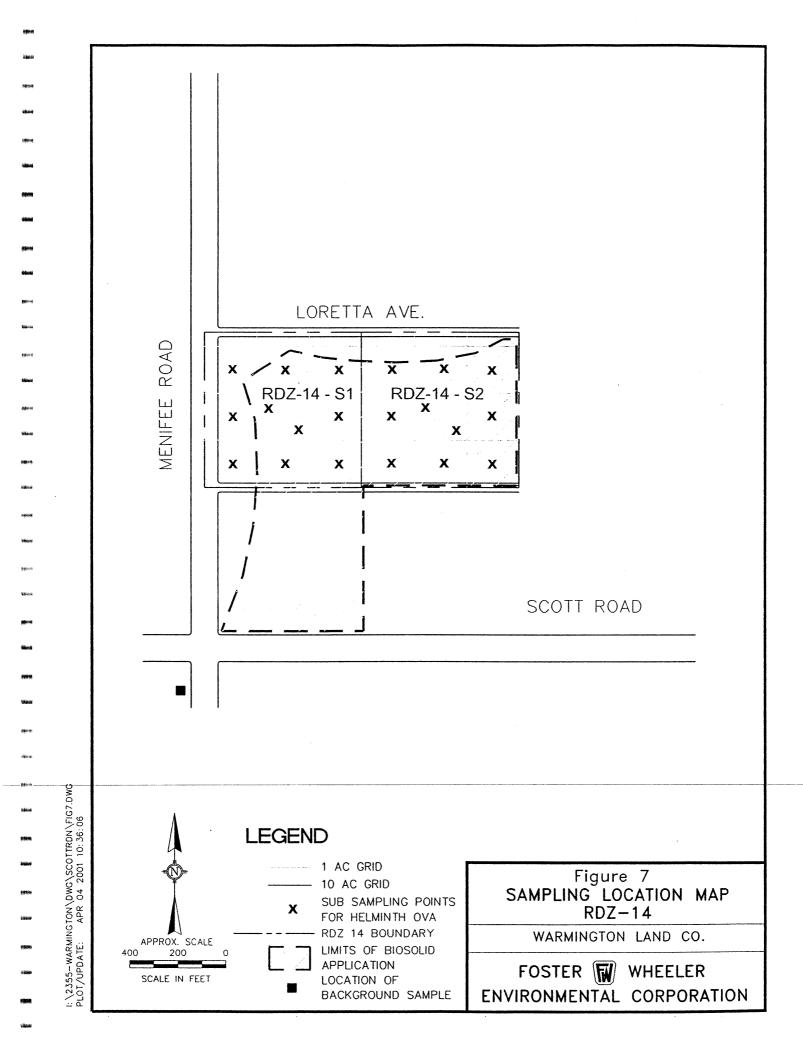
FOSTER WHEELER ENVIRONMENTAL CORPORATION











APPENDIX A

LABORATORY DATA PACKAGES AND CHAIN-OF-CUSTODY DOCUMENTS SCOTT ROAD NORTH SOIL INVESTIGATION RIVERSIDE, CALIFORNIA



685 Stone Road, Unit 6 · Benicia, CA 94510 · (707) 747-5906 · 1-800-GIARDIA · FAX (707) 747-1751 · WEB: www.biovir.com

REPORT OF SAMPLE EVALUATION

REPORT NO.:

S010371A through S010371N

PAGE NO.:

1 of 2

CLIENT ADDRESS:

Foster Wheeler Environmental Corp

1940 E. Deere Street, Suite 200

Santa Ana, CA 92705

CLIENT NO.:

FWE001

SAMPLE INFORMATION:

Name of Sampler:

M. Losi

Sample Date:

03/20/01

Sample Source:

BioSolid, Composite

Sample Location:

Riverside County

OFS No.:

2355.0004

Project:

Warmington

Sample Received Date: 03/21/01 Sample Received Time: 09:00

ASSAY PERFORMED:

1. Helminth Ova Assay (EPA 600/1-87/014):

Analysis Begun Date: 03/22/01

Time: 16:15

Analyst Initials: RED

2. Total Solids Assay (SM 18th; 2540B):

Analysis Begun Date: 03/21/01

Time: 12:36

Analyst Initials: LAR

SEE PAGE 2 FOR RESULTS OF THIS REPORT

REPORT NO.: S010371A - N PAGE NO.: 2 of 2 CLIENT NO.: FWE001

ASSAY RESULTS:

BIOVIR ID	CLIENT ID	SAMPLE TIME	SAMPLE VOLUME (GRAMS)	% TOTAL SOLIDS (TS)	VIABLE HELMINTH OVA / 4 GRAMS TS*		
S010371A	RDZ - 00 - S1	08:45	252	80.51	<1		
S010371B	RDZ - 00 - S2	09:30	336	87.33	<1		
S010371C	RDZ - 11 - S1	10:20	357	84.98	<1		
S010371D	RDZ - 11 - S2	10:30	406	84.62	<1		
S010371E	RDZ - 11 - S3	10:55	441	90.09	<1		
S010371F	RDZ - 11 - S4	11:10	441	89.03	<1		
S010371G	RDZ - 12 - S1	12:05	420	92.14	<1		
S010371H	RDZ - 12 - S2	12:20	476	92.63	<1		
S010371I	RDZ - 13 - S1	11:25	406	90.91	<1		
S010371J	RDZ - 13 - S2	11:28	420	94.15	<1		
S010371K	RDZ - 13 - S3	11:40	434	91.06	<1		
S010371L	RDZ - 13 - S4	11:50	490	95.05	<1		
S010371M	RDZ - 14 - S1	09:30	322	88.34	<1		
S010371N	RDZ - 14 - S2	09:45	385	90.77	<1		

^{*&}quot;Less than" results represent the lowest detection limit for this assay. No Helminth Ova seen in this assay.

SAMPLE EVALUATION PERFORMANCE CRITERIA: The precise rates of recovery of organisms from environmental samples cannot be determined. BioVir Laboratories has analyzed your sample(s) in accordance with the method described with each analyte above, however, due to inherent limitations of these methods organisms may avoid detection. For additional information regarding the limitations of the method(s) referred to above please call us at 1-800-GIARDIA.

COMPANY IS NOT AN INSURER: BioVir Laboratories is not an insurer or guarantor of the quality and/or purity of water, wastewater, biosolid or other material from which the sample was taken. BioVir offers no express or implied warranties whatsoever concerning the quality or purity of any water, wastewater, blosolid or other material which is ultimately consumed, distributed, applied or otherwise disposed.

5-3-01

SIGNATURE/DATE

5-10-01

YUMBa'l Agent

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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FO**STER WHEELER ENVIRONMENT**AL CORPORATION

FOS 002

CHAIN OF CUSTODY FORM REQUEST FOR ANALYSIS 0FS NO. 2355 0004 HAZARD IDENTIFICATION WARM, NOTON Reactive NORMAL X DAYS Flammable 🗍 Toxic □ PIVEZSIE COUNTY RUSH 🗌 DAYS Skin Irritant 🗍 Infectious IT ANALYSES REQUIRED M. LOSI Š BIOVIR REPORTS TO BE SENT TO M. LOSI SAMPLE MATERIAL NUMBER SAMPLE TIME DATE CONTAINER ØF. NUMBER COLLECTED COLLECTED OTHER (Describe) SIZE(S) CONTAINERS WATER SOIL ROZII 51 1020 3/20/01 RB2-11 S2 1030 1055 ROZ-1153 RDZ-1154 1110 ROZ-1251 120503 ROZ-1252 1220 1125 RO2-1351 PO2-1352 1128 ROZ13-53 1140 1 R02-13-54 1150 RD2-14 SI 0930 LABORATORY INSTRUCTIONS/COMMENTS 1433